

M42 Junction 6 Development Consent Order Scheme Number TR010027

8.52 Great Crested Newt Survey Report 2019

Planning Act 2008

Rule 8 (1)(k)

The Infrastructure Planning (Examination Procedure) Rules 2010

Volume 8

September 2019

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

M42 Junction 6
Development Consent Order 202[]

Great Crested Newt Survey Report

Regulation Number	Rule 8(1)(k)
Planning Inspectorate Scheme Reference	TR010027
Document Reference	8.52
Author	M42 Junction 6 Project Team & Highways England

Version	Date	Status of Version
1	02.10.19	Final for submission for Deadline 4

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1 Introduction

- 1.1.1 This report has been prepared on behalf of Highways England and provides detail of survey for great crested newt (*Triturus cristatus*) (GCN) that have been undertaken in 2019 as part of the M42 Junction 6 Improvement (the Scheme).
- 1.1.2 The purpose of this report is to provide supplementary information on the status and distribution of GCN populations that have the potential to be impacted by the Scheme.
- 1.1.3 The findings of the 2019 GCN surveys (presented herein) update the survey information that was gathered and used to inform the biodiversity assessment of the Scheme, as reported in the following documents which were submitted as part of the Development Consent Order (DCO) application in January 2019.
- Chapter 9 (Biodiversity) of Volume 1 of the Environmental Statement [**APP-054/Volume-6.1**];
 - Appendix 9.9 (Great Crested Newt Survey Report) of Volume 3 of the Environmental Statement [**APP-137/Volume 6.3**]; and
 - Appendix 9.19 (Draft Great Crested Newt Licence) of Volume 3 of the Environmental Statement [**APP-146/Volume 6.3**].
- 1.1.4 The 2019 survey results have informed a re-evaluation of the predicted impacts and effects on the local GCN population as a result of the Scheme.

2 Legislation

- 2.1.1 GCN is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) [REF 1] and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 [REF 2]. This legislation, when considered in unison, results in a level of protection that prohibits the intentional, deliberate or reckless:
- killing, injuring, taking or disturbance of great crested newts;
 - damaging, destroying or obstructing of any place used by great crested newts for the purposes of breeding, sheltering/protection; and
 - selling and/or advertising for sale a great crested newt or any part thereof.
- 2.1.2 GCN and common toad (*Bufo bufo*) are listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 [REF 3] as a Species of Principal Importance for Conservation in England. Section 40 of the same Act [REF 3] requires that local and regional authorities have regard to the conservation of biodiversity in England, when carrying out their normal functions.
- 2.1.3 Common species of amphibian in the UK, common frog (*Rana temporaria*), smooth newt (*Lissotriton vulgaris*) and palmate newt (*Lissotriton helvetica*) are protected from commercial sale only under the Wildlife and Countryside Act 1981 (as amended) [REF 1].

3 Methodology

3.1 Habitat suitability index assessment

- 3.1.1 All ponds within 500m of the Scheme's Order Limits were considered for further survey (see Figure 1). This included 17 ponds (AD1 to AD15, AD15a and AD16) that were not previously reported within Chapter 9 of Volume 1 of the Environmental Statement [APP-054/Volume 6.1] and in Appendix 9.9 of Volume 3 of the Environmental Statement [APP-137/Volume 6.3].
- 3.1.2 The ponds that were not subject to any access restrictions, were assessed for their suitability to support GCN using the standardised Habitat Suitability Index (HSI) [REF 4] (summarised in **Table 3-1**).
- 3.1.3 The HSI is a mathematical model that incorporates ten suitability indices, all of which are thought to influence the likelihood of the presence of GCN in a waterbody. The result of an HSI is a score between 0 (unsuitable) and 1 (optimal). The HSI is a tool for assessing the suitability of waterbodies for GCN; however, it is not a substitute for surveys. The HSI is calculated using the following formula.

$$\text{HSI} = (\text{SI1} \times \text{SI2} \times \text{SI3} \times \text{SI4} \times \text{SI5} \times \text{SI6} \times \text{SI7} \times \text{SI8} \times \text{SI9} \times \text{SI10})^{1/10}$$

- 3.1.4 SI are Suitability Indices, as detailed below in **Table 3-1**.

Table 3.1 - Habitat Suitability Indices

Suitability Indices	Factor
SI ₁	Geographic Location
SI ₂	Pond Area
SI ₃	Permanence
SI ₄	Water Quality
SI ₅	Shade
SI ₆	Waterfowl
SI ₇	Fish
SI ₈	Additional Ponds within 1km
SI ₉	Terrestrial Habitat
SI ₁₀	Macrophyte Cover

3.2 Environmental DNA surveys

- 3.2.1 A method for establishing the presence or likely absence of GCN through detection of fragments of environmental DNA (eDNA) in waterbodies was approved for use by Natural England in 2014 [REF 5]. As potentially only one survey visit is required, this has the benefit in less disturbance to the ponds than the traditional field surveys required to establish presence/absence and less conventional survey visits required unless the eDNA result is positive. In the latter case six standard surveys are usually still required to provide a population estimate to inform any licencing requirements.

- 3.2.2 The scope of the eDNA surveys excluded those ponds that were already known to support GCN as reported within Chapter 9 of Volume 1 of the Environmental Statement [APP-054/Volume 6.1] and within Appendix 9.9 of Volume 3 of the Environmental Statement [APP-140/Volume 6.3]. These ponds were 6, 7, 11, 12, 13 and 36.
- 3.2.3 All other ponds that were accessible and held water in 2019 were re-sampled in order to provide an up to date baseline for the assessment.
- 3.2.4 Surescreen Scientifics provided the eDNA testing kits and were used to process the samples using the method of analysis approved by Natural England. The water samples were collected using the guidance in Biggs et al (2014) [REF 5]. As a minimum one of the surveyors undertaking the works held a valid GCN survey licence.

3.3 Population class size estimates

- 3.3.1 The scope of aquatic GCN surveys for 2019 comprised of those ponds where a positive eDNA test was recorded in 2019 or where GCN populations had been previously recorded. The ponds previously recorded as having GCN populations were 6, 7, 9, 11, 12, 36, 44, AD2, AD15 and AD15a.
- 3.3.2 The scope of survey also included pond 19 which had previously been subject to historical restrictions to access. As such, the assessment presented within Chapter 9 of Volume 1 of the Environmental Statement [APP-054/Volume 6.1] had assumed this waterbody supported a GCN population.

3.4 Survey approach and summary of weather conditions

- 3.4.1 All water bodies surveyed were visited by a team of two ecologists where as a minimum one of the surveyors undertaking the works held a valid GCN survey licence. On each visit, torchlight surveying, bottle trapping, egg searching and netting (if one of the first three methods was not possible) was undertaken in accordance with the standard methodologies for GCN survey [REF 6]. These methods involve:
- torchlight survey with a powerful torch (Cluson Clulite CB2, 50W Xenon spot bulb). All newts observed were recorded according to species, sex and life stage where possible;
 - bottle trapping using plastic bottle traps (standard 2L pop bottle design) set at an average spacing of 2m along accessible pond perimeters. In accordance with best practice, traps were set in the evening, left overnight and emptied early the following morning;
 - egg searching was undertaken amongst vegetation at each survey. Once eggs were found no further searching was undertaken; and
 - netting was undertaken by searching vegetation and open water at the perimeter of the pond, with a minimum of 15 minutes searching completed for every 50m of shoreline.

- 3.4.2 A total of six survey visits were undertaken in order to produce an estimate of the size class of the population of GCN supported by the pond. All survey visits were undertaken between April and June 2019 in meteorological conditions considered suitable. The weather conditions for all survey visits are presented in Appendix B: Survey Result Sheets.
- 3.4.3 At least two survey visits were undertaken during the period of mid-April to mid-May, in accordance with the Great Crested Newt Mitigation Guidelines [REF 6].
- 3.4.4 Presence, sex, life stage and numbers were recorded for GCN and also common frog, common toad, smooth newt and palmate newt. **Table 3-2** presents the population size class of peak counts for great crested newts as presented in the Great Crested Newt Mitigation Guidelines [REF 6].

Table 3.2 - Population size class of great crested newt

GCN peak counts	Population classification
Up to 10	Small
Between 11 and 100	Medium
Over 100	Large

3.5 Limitations

- 3.5.1 There was no access to ponds 13 or AD1 during the GCN surveys completed in 2019.
- 3.5.2 Pond AD7 could not be accessed for reasons of health and safety.
- 3.5.3 Access was limited to the following ponds after the peak survey season (which is considered mid-April to mid-May for population surveys) had passed:
- Pond 6 was only accessible for survey from 30 May 2019 onwards;
 - Pond 26 was accessible for a single survey visit on June 13 2019; and
 - Pond 28 was accessible for two visits on 10 and 13 June 2019.
- 3.5.4 These limitations are appropriately captured within Section 5: re-evaluation and assessment of this report.
- 3.5.5 Ponds 19 & AD2 were identified as being very shallow and concrete lined, which precluded the bottle trapping and netting methodologies. Torchlight surveying and egg searches were completed on these ponds. Due to the low water levels these the torchlight survey was considered sufficient to provide an assessment of population size and the lack other methods is not considered to represent a significant limitation to the assessment.
- 3.5.6 All accessible areas of pond 9 had dried up by the fourth population class size survey visit on 28 May 2019. Further surveys could not be conducted safely from this date. Three of the surveys had been completed within the optimal period for GCN survey (mid-April to mid-May) and therefore the lack of further survey visits is not considered to represent a significant limitation to the assessment.

4 Results

4.1 HSI and eDNA surveys

- 4.1.1 The HSI and eDNA surveys were conducted in April and May 2019. The location of ponds are illustrated on Figure 1 and the results of survey are summarised in **Table 4-1**. Photographs of each pond and the detailed assessments of individual ponds are provided in Appendix A and Appendix B respectively.
- 4.1.2 Ponds 3, 4, 8, 10, 18, 20, 23, 24, 25, 27, 29, 32, 39, 43, AD8 and AD11 were dry at the time of survey and therefore were unsuitable for GCN and were not considered further.
- 4.1.3 Ponds 40 and AD14 were too shallow to take water samples, and as the near lack of water was considered to make these ponds unsuitable as breeding habitat for GCN they were not considered further.
- 4.1.4 Ponds 29, 46 and AD6 no longer existed (2019) and were not considered further.
- 4.1.5 Pond AD7 was not accessible to direct survey due to health and safety concerns, and access permission was not granted for survey of ponds 13 and AD1.
- 4.1.6 Ponds 6, 7, 11, 12, 13 and 36 were not subject to eDNA survey as GCN had been confirmed present by previous survey work.
- 4.1.7 Of the remaining ponds GCN were confirmed to be absent from ponds 1, 2, 5, 14, 15, 16, 17, 19, 21, 22, 30, 31, 34, 35, 37, 38, 41, 42, 45, 47, 48, AD3, AD4, AD5, AD6, AD9, AD12 and AD13, and therefore these waterbodies were not considered further.
- 4.1.8 eDNA survey confirmed the presence of GCN in ponds 9, 26, 28, 44, AD2, AD15 and AD15a.

Table 4.1 - HSI Scores for ponds previously identified

Pond	HSI Score 2019	Suitability 2019	eDNA Result
1	0.72	Good	Negative
2	0.81	Excellent	Negative
3	Pond Dry		-
4	Pond Dry		-
5	0.51	Below Average	Negative
6	0.61	Average	Known GCN Population*
7	0.73	Good	Known GCN Population*
8	Pond Dry		-
9	0.79	Good	Positive
10	Pond Dry		-
11	0.65	Average	Known GCN Population*

Pond	HSI Score 2019	Suitability 2019	eDNA Result
12	0.57	Below Average	Known GCN Population*
13	No Access		Known GCN Population*
14	0.51	Average	Negative
15	0.50	Poor	Negative
16	0.47	Poor	Negative
17	0.85	Excellent	Negative
18	Pond Dry		-
19	0.64	Average	Negative
20	Pond Dry		-
21	0.68	Average	Negative
22	0.3	Poor	Negative
23	Pond Dry		-
24	Pond Dry		-
25	Pond Dry		-
26	0.77	Good	Positive
27	Pond Dry		-
28	0.6	Average	Positive
29	Pond no longer exists		-
30	0.65	Average	Negative
31	0.72	Good	Negative
34	0.46	Poor	Negative
35	0.53	Below Average	Negative
36	0.73	Good	Known GCN Population*
37	0.5	Poor	Negative
38	0.4	Poor	Negative
39	Pond Dry		-
40	0.25	Poor	**
41	0.72	Good	Negative
42	0.39	Poor	Negative
43	Pond Dry		-

Pond	HSI Score 2019	Suitability 2019	eDNA Result
44	0.51	Below Average	Positive
45	0.5	Below Average	Negative
46	Pond no longer exists		-
47	0.61	Average	Negative
48	0.78	Good	Negative
AD1	No access		
AD2	0.42	Poor	Positive
AD3	0.72	Good	Negative
AD4	0.27	Poor	Negative
AD5	0.45	Poor	Negative
AD6	0.61	Average	Negative
AD7	0.49	Poor	No access***
AD8	Pond Dry		-
AD11	Pond dry		-
AD12	0.70	Good	Negative
AD13	0.58	Below average	Negative
AD14	0.36	Poor	**
AD15	0.40	Poor	Positive
AD15a	0.47	Poor	Positive
AD16	Pond no longer exists		-
* eDNA survey not required as GCN population known to be present from previous survey			
** Pond too shallow to survey			
*** No access for health and safety reasons			

4.2 Population class size estimates

- 4.2.1 Population class size estimates were carried out on ponds with a known GCN population present. This was established either through findings of surveys from previous years or through positive eDNA results from the 2019 eDNA surveys.
- 4.2.2 Consistent with the results of eDNA survey, GCN were not recorded from pond 19 during population size class surveys. Therefore, GCN are considered to be absent from this waterbody.

- 4.2.3 The population size class survey therefore included ponds 6, 7, 9, 11, 12, 26, 28, 36, 44, AD2, AD15 and AD15a. **Table 4-2** shows the peak count for each pond surveyed, and the full survey results are presented in Appendix B.
- 4.2.4 No GCN were recorded from ponds 9, 26, 28, AD2, AD15 and AD15a during population size class surveys. Since eDNA survey had confirmed the presence of GCN in these waterbodies, they are assumed to support small GCN populations only (see Section 5).
- 4.2.5 The peak counts for ponds 6 and 7 and 11 and 12 were totalled to get the population size due to their proximity to each other.

Table 4-2 - Summary Results of GCN Population Size Class Assessments

Pond Number	Peak Count of GCN	Population size
6	1	Small*
7	3	
9	0	Small
11	4	Small
12	5	
26	0	Small*
28	0	Small*
36	2	Small
44	0	Small
AD2	0	Small
AD15	0	Small
AD15a	0	Small
* Survey completed outside optimal survey period (see Section 3)		

5 Further re-evaluation and assessment

5.1 Consideration of GCN population

- 5.1.1 The absence of GCN or the lack of suitable habitat has been confirmed in 2019 for 51 ponds that are located within 500m of the Scheme's Order Limits. These ponds are not considered further in this assessment.
- 5.1.2 As a result of previous access restrictions to pond 19 the assessment presented within Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] and within Appendix 9.9 of Volume 3 of the Environmental Statement [**APP-140/Volume 6.3**] had assumed the presence of GCN in this waterbody. The 2019 survey has now confirmed the absence of GCN from pond 19, and therefore the precautionary mitigation measures associated with this pond are not required and this pond is not considered further.
- 5.1.3 Access was not available to ponds 13 and AD1, these are considered further below.
- Pond 13 is known to support GCN and the previous data reported within Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**] and within Appendix 9.9 of Volume 3 of the Environmental Statement [**APP-140/Volume 6.3**] have continued to be relied upon. Therefore, due to low population present and the magnitude of the intervening distance, there are considered to be no impacts to the population of GCN in pond 13 and it is not considered further.
 - Pond AD1 is separated from the Scheme's Order Limits by the B4438 Catherine de Barnes Lane and Solihull Parkway, which have raised kerbs and inset gullies which are likely to represent barriers to the dispersal of GCN. Any GCN that may be present in pond AD1 are unlikely to make use of habitat within the Scheme's Order Limits, and therefore the lack of survey access does not represent a limitation to the assessment and this pond is not considered further.
- 5.1.4 Together with the results reports contained within Appendix 9.9 of Volume 3 of the Environmental Statement [**APP-137/Volume 6.3**], GCN have been confirmed in ponds 6, 7, 9, 11, 12, 13, 26, 28, 36, 44, AD2, AD15 and AD15a.
- 5.1.5 Those ponds where GCN are present and which are in close proximity to each other may be considered to represent metapopulations and grouped into single population size class.
- 5.1.6 The following assessment considers each of the newt populations and highlights where ponds are considered to form part of the same meta-population:
- Ponds 9 and 44 are located within the Order Limits. As reported in Appendix 9.9 of the Environmental Statement [**APP-137/Volume 6.3**], previous surveys in 2018 and 2017 confirmed GCN to be absent from ponds 9 and 44, **respectively**. GCN presence has now been confirmed in ponds 9 and 44 by eDNA only, with no GCN being recorded during population size class surveys. Given the previous data, the apparent isolation of each of these ponds and the lack of other nearby populations, the reasons for the occurrence of GCN in

these ponds is not clear. However, as a precaution both ponds are considered to support small GCN populations.

- Access was restricted to pond 6. Notwithstanding this, the numbers of GCN recorded at pond 7, which supports the same meta-population, were consistent with those recorded in 2017 [REF 7]. Therefore, the survey data is considered valid and sufficient to inform the impact assessment and mitigation. These ponds are located over 250m from the Scheme's Order Limits and given the magnitude of this distance and the small population size, it is considered that these ponds do not represent a constraint and are not considered further.
- The updated surveys identified a small GCN population in ponds 12 and 13. As a survey undertaken by others in 2018 [REF 8] identified a Medium meta-population (peak count 15 adults) in ponds 11 and 12, this represents the population status that will be applied in the assessment.
- Access to ponds 26 and 28 was restricted and an effective population size class assessment was not obtained from either pond. As reported within Appendix 9.9 of Volume 3 of the Environmental Statement [**APP-137/Volume 6.3**], GCN were confirmed to be absent from pond 26 in 2018. Therefore, the presence is likely to represent a very recent colonisation and it is considered reasonable to conclude that no more than a small population is present in pond 26.
- Ponds 28 and AD7 are located in a working quarry that lies adjacent to the Scheme's Order Limits. Previous survey of the ponds within the quarry had confirmed the absence of GCN [REF 8]. Therefore, the presence of GCN in pond 28 is likely to represent a colonisation since the previous surveys were completed. Pond AD7 was inaccessible for reasons of health and safety and therefore given the close proximity to pond 28, this pond is also assumed to also support GCN. As a precautionary measure these ponds are assumed to support a Medium GCN population.
- Consistent with previous survey data pond 36 has been demonstrated to support a small GCN population.
- GCN are present at pond AD2, AD15 and AD15a, with no GCN recorded during population class size estimate surveys. Therefore, it is considered that a small population is present, but in such low numbers they were not detected during the survey visits. Given the small populations present and the magnitude of the distance separating these ponds from the Order Limits it is considered that there will be no impacts upon the GCN populations present and these ponds are not considered further.

5.2 Re-evaluation and assessment

- 5.2.1 The following considers the impacts upon the additional GCN populations that have been identified by surveys undertaken in 2019 and which are likely to be impacted by the Scheme.

- 5.2.2 The assessment assumes that as reported within Chapter 9 of Volume 1 of the Environmental Statement [APP-054/Volume 6.1], best working practices will be implemented and a Natural England European Protected Species (EPS) derogation licence obtained to detail the specific measures required to protect GCN and maintain the Favourable Conservation Status of the populations present.
- 5.2.3 Based on the further information collated on GCN populations in 2019, further consideration is set out below of the small populations supported by ponds 9, 26, 36, 44 and the medium meta-populations supported by ponds 11 and 12, AD2 and 28.
- 5.2.4 The small population of pond 36 and the medium population of ponds 11 and 12 have already been considered within Chapter 9 of Volume 1 of the Environmental Statement [APP-054/Volume 6.1] and within Appendix 9.9 of Volume 3 of the Environmental Statement [APP-137/Volume 6.3]. The assessment of these three ponds are considered to remain valid and no further mitigation is required.

Habitat Loss

- 5.2.5 Ponds 9 and 44 are located within the Scheme's Order Limits. As illustrated on the Works Plans [APP-007/Volume 2.3] there are no proposals to remove or otherwise directly impact these ponds (the closest works are located over 50m from either pond). Given the small populations present and the poor quality of nearby habitat which is dominated by intensive farmland, the temporary loss of any associated terrestrial habitat unlikely to undermine the conservation status of these populations.
- 5.2.6 Pond 26 supports a GCN population that is considered to represent a recent colonisation. The pond is separated from the Scheme's Order Limits by approximately 100m. Given the magnitude of this distance and the small population size, any impact from the temporary loss of associated terrestrial habitat unlikely to undermine the conservation status of this population.
- 5.2.7 There is the potential for temporary loss of habitat within the Order Limits that supports the assumed medium meta-population supported by ponds AD2 and 28. This habitat lies over 50m from the closest pond AD2 and as shown on the works plans [APP-007/Volume 2.3] is likely to be limited to alterations within hardstanding and the existing road verge. Therefore, any habitat losses will be limited in extent and temporary in nature, and therefore unlikely to undermine to conservation status of the GCN populations.

Habitat Fragmentation

- 5.2.8 The populations present are either already isolated or located sufficiently far outside the Scheme's Order Limits that no additional fragmentation impacts are likely to occur to any of the identified GCN populations.

Direct Mortality

- 5.2.9 As reported within Chapter 9 of Volume 1 of the Environmental Statement [APP-054/Volume 6.1], construction activities within 250m of breeding ponds may result in direct mortality of GCN during the terrestrial phase of their lifecycle. The Natural England EPS derogation licence will permit the clearance of GCN terrestrial habitat necessary to undertake construction of the Scheme.

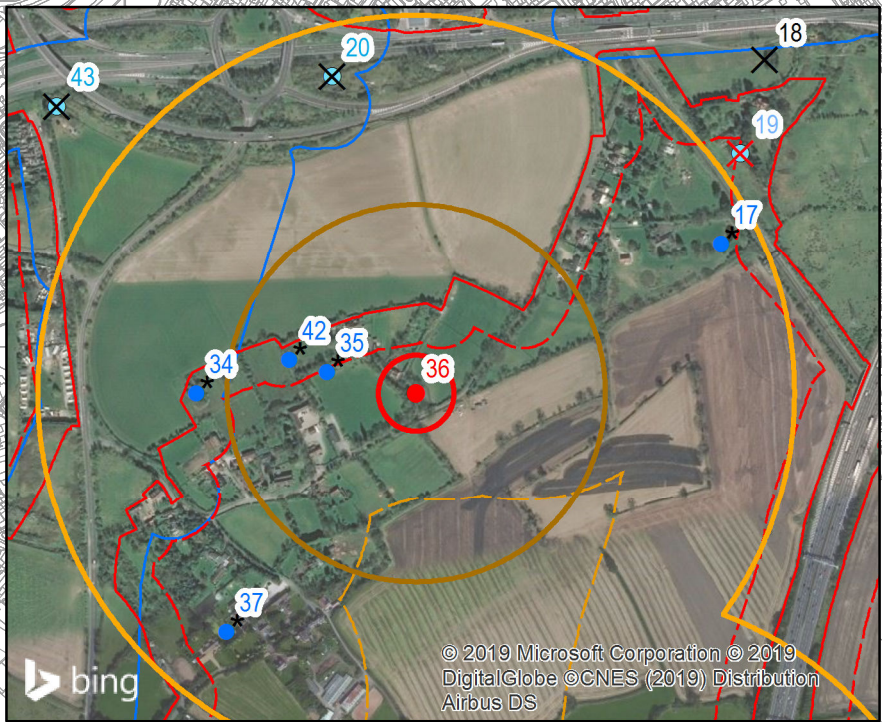
6 Conclusion

- 6.1.1 Taking in to account the 2019 survey data and re-evaluation of the conclusions presented within Chapter 9 of Volume 1 of the Environmental Statement [**APP-054/Volume 6.1**], it is considered the assessment of habitat loss to any of the ponds is consistent with the reported effects already identified.
- 6.1.2 Accordingly, the assessment of the impacts to the local GCN population and habitats as a result of the Scheme is considered to remain valid and its conclusions remain unchanged.

7 References

REF 1	Wildlife and Countryside Act 1981. HMSO
REF 2	Conservation of Habitats and Species Regulations 2017. HMSO
REF 3	Natural Environment and Rural Communities Act 2006. HMSO
REF 4	Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000) <i>Evaluating the suitability of habitat for the Great Crested Newt</i> (<i>Triturus cristatus</i>). Herpetological Journal 10(4), 143-155.
REF 5	Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014a) <i>Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt</i> (<i>Triturus cristatus</i>) <i>environmental DNA</i> . Freshwater Habitats Trust, Oxford.
REF 6	English Nature (2001) <i>The Great Crested Newt Mitigation Guidelines</i> . English Nature
REF 7	Wardell Armstrong (2018) <i>Motorway Service Area (MSA) and New Junction between Junction 5 & 6 of the M42, Solihull – Great Crested Newt Survey – 2018 Update</i> . A report produced on behalf of Extra MSA Group
REF 8	Middlemarch Environmental Ltd. (2011) <i>Land in the packington estate, Solihull, West Midlands – Great Crested Newt Survey</i> . A report to Greenfeild Associates and Packington Estate

Figure 1 – GCN Survey Plan



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Metres

Filepath: \\vds2p001\LE Projects\GIS Management\60543032 - M42 Jct 6 GIS Folder - GIS01 Maps\100 Figures\New Template Ecology Figures\FIGURE 9.9 - 2019.mxd

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 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
 - SCHEME BOUNDARY
 - 50 M BUFFER
 - 250 M BUFFER
 - 500 M BUFFER
 - GCN RECORDED IN 2019
 - GCN RECORDED IN 2017
 - NO GCN RECORDED IN 2018 (EDNA)
 - NO GCN IN RECORDED IN 2019 (EDNA)
 - POND TOO SHALLOW TO SURVEY
 - UNABLE TO SURVEY DUE TO H&S REASONS
 - NO ACCESS
 - POND DRY
 - DOES NOT EXIST ANYMORE

- BUFFERS AROUND GCN PONDS
SCOPED IN THE ASSESSMENT
- 50 M
 - 250 M
 - 500 M

FIRST ISSUE	GB	JG	28/08/19	C01
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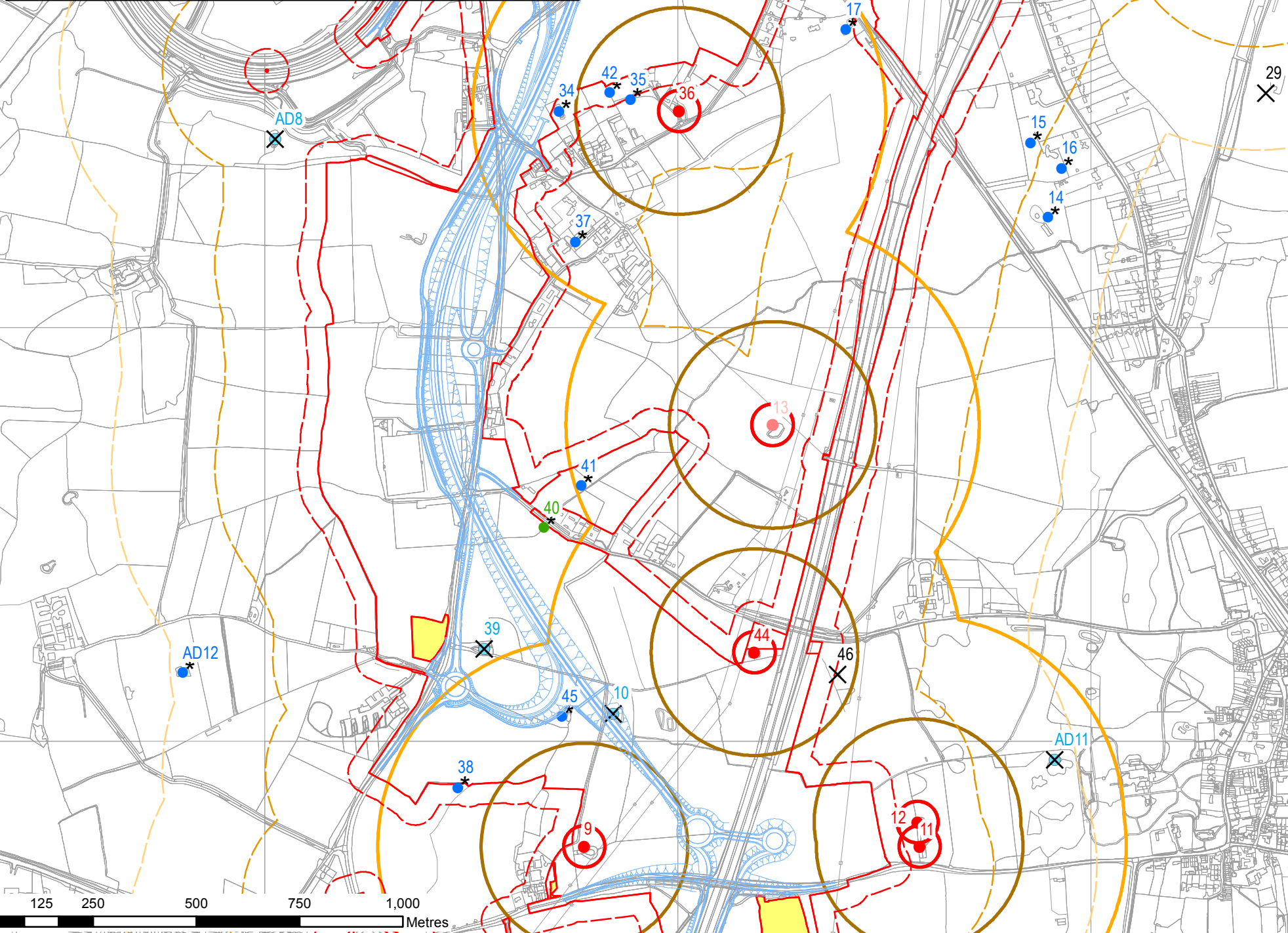
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**M42 JUNCTION 6
IMPROVEMENT**

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**FIGURE 1
GCN SURVEY PLAN
SHEET 1 OF 3**

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 - GCN RECORDED IN 2019
 - GCN RECORDED IN 2017
 - NO GCN IN RECORDED IN 2018 (EDNA)
 - NO GCN IN RECORDED IN 2019 (EDNA)
 - POND TOO SHALLOW TO SURVEY
 - UNABLE TO SURVEY DUE TO H&S REASONS
 - NO ACCESS
 - POND DRY
 - DOES NOT EXIST ANYMORE
- BUFFERS AROUND GCN PONDS
SCOPED IN THE ASSESSMENT
- 50 M
 - 250 M
 - 500 M

FIRST ISSUE	GB	JG	28/08/19	C01
Revision Details	By	Check	Date	Suffix

Purpose of Issue
FOR INFORMATION

Client
Highways England
Floor 5
Two Colmore Square
38 Colmore Circus
B4 6BN

Development Consent Order Number
TR010027

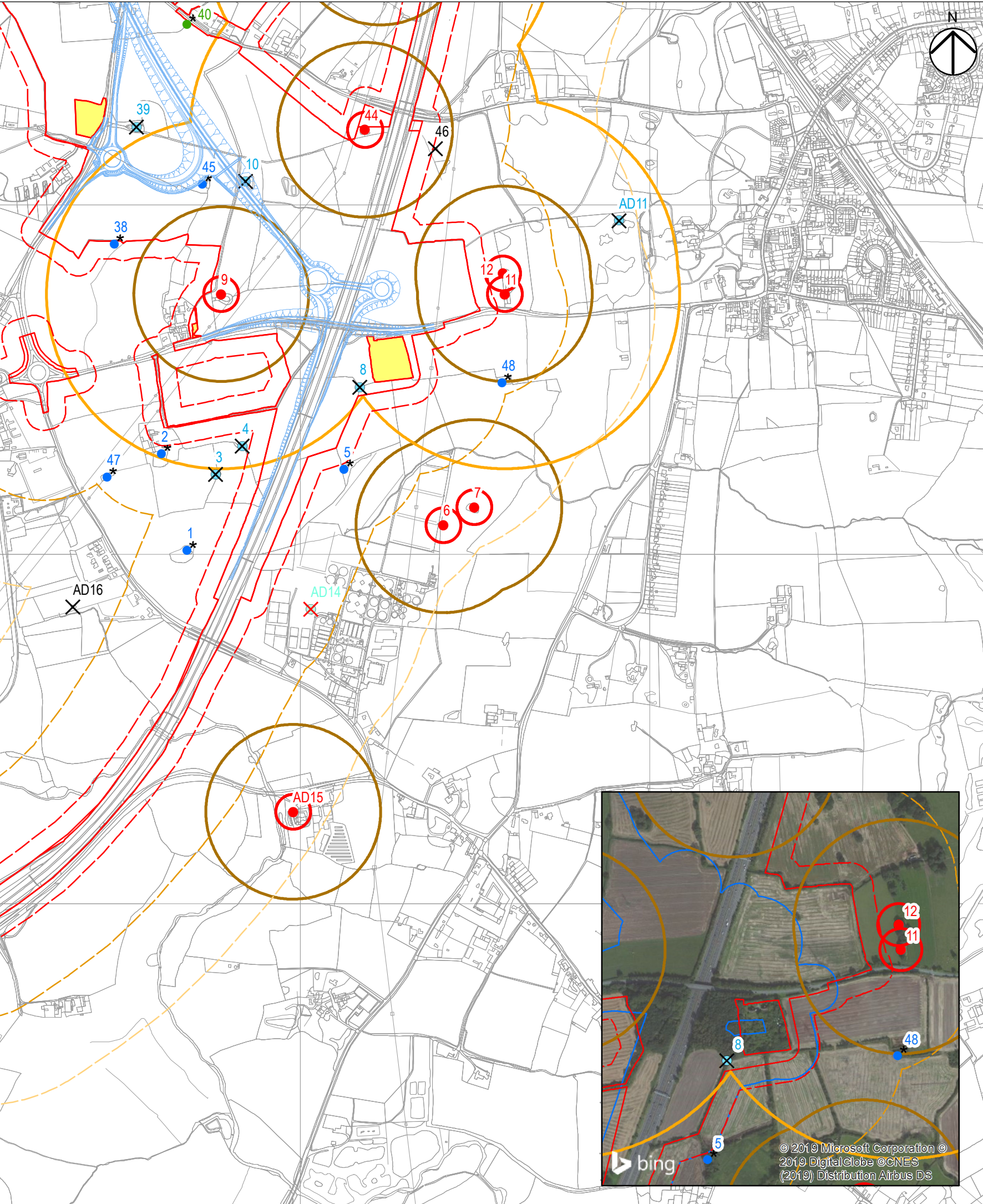
Project Title
**M42 JUNCTION 6
IMPROVEMENT**

Drawing Title
**FIGURE 1
GCN SURVEY PLAN
SHEET 2 OF 3**

Designed MWH	Drawn GB	Checked MWH	Approved JG	Date 28/08/19
Internal Project No 60543032		Suitability D7		
Scale @ A3 1:12,000		Zone M42		
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Drawing Number HE551485 -ACM				
Highways England Pin Originator Volume Rev HE551485 -ACM -EGN- C01				
M42_SW_ZZ_ZZ -DR-DC-0261-				
Location Type Role Number				

Filepath: \\ukids2paw001\LE_Projects\GIS Management\60543032 - M42 Jct 6 GIS Folder - GIS01 Maps\100 Figures\New Template Ecology Figures\FIGURE 9.9 - 2019.mxd

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 - LIMITS OF LAND TO BE TEMPORARILY ACQUIRED FOR SIGNAGE INSTALLATION
 - LAND NOT INCLUDED WITHIN THE ORDER LIMITS
 - SCHEME BOUNDARY
 - 50 M BUFFER
 - 250 M BUFFER
 - 500 M BUFFER
 - GCN RECORDED IN 2019
 - GCN RECORDED IN 2017
 - NO GCN RECORDED IN 2018 (EDNA)
 - NO GCN IN RECORDED IN 2019 (EDNA)
 - POND TOO SHALLOW TO SURVEY
 - UNABLE TO SURVEY DUE TO H&S REASONS
 - NO ACCESS
 - POND DRY
 - DOES NOT EXIST ANYMORE

- BUFFERS AROUND GCN PONDS
SCOPED IN THE ASSESSMENT
- 50 M
 - 250 M
 - 500 M

FIRST ISSUE	GB	JG	28/08/19	C01
Revision Details	By	Check	Date	Suffix

Purpose of Issue
FOR INFORMATION

Client
Highways England
Floor 5
Two Colmore Square
38 Colmore Circus
B4 6BN

Development Consent Order Number
TR010027

Project Title
**M42 JUNCTION 6
IMPROVEMENT**

Drawing Title
**FIGURE 1
GCN SURVEY PLAN
SHEET 3 OF 3**

Designed MWH	Drawn GB	Checked MWH	Approved JG	Date 28/08/19
Internal Project No 60543032	Suitability D7	Scale @ A3 1:12,000	Zone M42	

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Filename: \\ukds2paw001\LE_Projects\GIS Management\60543032 - M42 Jct 6 GIS Folder \GIS01_Map\100_Figures\New_Template\Ecology_Figures\FIGURE 9.9_2019.mxd



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Appendices

Appendix A: Photographs of Ponds

Pond Number	Photo
1	
2	



Pond Number	Photo
3	
4	

Pond Number	Photo
5	
6	

Pond Number	Photo
7	 A photograph of a pond surrounded by trees and grass. The pond is dark and still, reflecting the surrounding greenery. The foreground is filled with tall, vibrant green grass. Several trees with green leaves are visible around the pond, and a large tree trunk is prominent on the right side.
8	 A photograph of a dense thicket of trees and undergrowth. The scene is filled with a complex network of bare, light-colored branches and some green foliage. The ground is covered with a mix of dry leaves, twigs, and green plants. The background shows more trees and a hint of a grassy area.

Pond Number	Photo
9	
10	


Pond Number	Photo
11	
12	
13	No Access

Pond Number	Photo
14	
15	



Pond Number	Photo
16	
17	



Pond Number	Photo
18	
19	

Pond Number	Photo
20	
21	

Pond Number	Photo
22	
23	



Pond Number	Photo
24	
25	



Pond Number	Photo
26	
27	

Pond Number	Photo
28	
29	No Longer Exists
30	



Pond Number	Photo
31	
34	



Pond Number	Photo
35	
36	

Pond Number	Photo
37	
38	

Pond Number	Photo
39	
40	

Pond Number	Photo
41	
42	



Pond Number	Photo
43	
44	



Pond Number	Photo
45	
46	No Longer Exists
47	

Pond Number	Photo
48	
AD1	No Access
AD2	


Pond Number	Photo
AD3	 A photograph of a pond (AD3) surrounded by dense green foliage and trees. The water is calm and reflects the surrounding greenery.
AD4	 A photograph of a pond (AD4) surrounded by dense green foliage and trees. The water is calm and reflects the surrounding greenery and the sky.

Pond Number	Photo
AD5	 A photograph of a pond (AD5) surrounded by dense green vegetation. The water is calm, reflecting the surrounding trees and the sky. The reflection is clear and detailed.
AD6	 A photograph of a pond (AD6) surrounded by dense green vegetation. The water is calm, reflecting the surrounding trees and the sky. The reflection is clear and detailed.

Pond Number	Photo
AD7	
AD8	

Pond Number	Photo
AD11	
AD12	

Pond Number	Photo
AD14	
AD15	

Pond Number	Photo
AD15a	 A photograph showing a calm pond in a rural setting. In the background, a large, multi-story brick building with a gabled roof is partially obscured by lush green trees. The building and the surrounding foliage are clearly reflected in the still water of the pond. A large, leafy tree branch hangs over the right side of the pond. The foreground consists of a grassy bank.

Appendix B: Survey Results

Pond Number/Reference	Pond 7			Date	04/04/2019			Visit Number	1			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool evening after wet day											
Air Temperature (°C) @ Time of Torching	6.2			Minimum Overnight Temperature (°C)	5			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	2			% Pond Margin Inaccessible	10			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	20:15		Number traps used	25							
	Time finish	20:44										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 6.1 °C								

Pond Number/Reference	Pond 11			Date	04/04/2019			Visit Number	1			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool evening after wet day											
Air Temperature (°C) @ Time of Torching	6.2			Minimum Overnight Temperature (°C)	5			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	3			% Pond Margin Inaccessible	40			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	20:55		Number traps used	25							
	Time finish	21:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.				Male	Female	Imm.
GCN		1										
Smooth Newt					1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 5.3 °C								

Pond Number/Reference	Pond 12			Date	04/04/2019			Visit Number	1			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool evening after wet day											
Air Temperature (°C) @ Time of Torching	6.2			Minimum Overnight Temperature (°C)	5			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	2			% Pond Margin Inaccessible	20			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:10		Number traps used	15							
	Time finish	21:25										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.				Male	Female	Imm.
GCN											✓	
Smooth Newt				1	1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 5.2 °C								

Pond Number/Reference	Pond 36			Date	04/04/2019			Visit Number	1			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool evening after wet day											
Air Temperature (°C) @ Time of Torching	5.8			Minimum Overnight Temperature (°C)	5			Torch Power	1 million CP			
Turbidity (0-5)	4			Veg cover (0-5)	3			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:25		Number traps used	10							
	Time finish	21:41										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.				Male	Female	Imm.
GCN											✓	
Smooth Newt				3	1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 5.8 °C								

Pond Number/Reference	Pond 7			Date	25/04/2019			Visit Number	2			
Surveyor Names	James Coupe and Sally Clague											
Weather conditions (Description)	Cool evening after warm, showery day											
Air Temperature (°C) @ Time of Torching	6			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	2			% Pond Margin Inaccessible	20			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:47		Number traps used	25							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN					2						✓	
Smooth Newt											✓	
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 9.7 °C								

Pond Number/Reference	Pond 11			Date	25/04/2019			Visit Number	2			
Surveyor Names	James Coupe and Sally Clague											
Weather conditions (Description)	Cool evening after warm, showery day											
Air Temperature (°C) @ Time of Torching	6.8			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	3			% Pond Margin Inaccessible	10			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:05		Number traps used	25							
	Time finish	21:16										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.				Male	Female	Imm.
GCN				1	1							
Smooth Newt		4		4	2							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 9.9 °C											

Pond Number/Reference	Pond 12			Date	25/04/2019			Visit Number	2			
Surveyor Names	James Coupe and Sally Clague											
Weather conditions (Description)	Cool evening after warm, showery day											
Air Temperature (°C) @ Time of Torching	6.8			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	2			% Pond Margin Inaccessible	5			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	21:20		Number traps used	15							
	Time finish	21:28										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				1	1							
Smooth Newt	2	6		4	2							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 9.7 °C No egg search conducted as GCN eggs previously found.											

Pond Number/Reference	Pond 19			Date	25/04/2019			Visit Number	1			
Surveyor Names	James Coupe and Sally Clague											
Weather conditions (Description)	Cool evening after warm, showery day											
Air Temperature (°C) @ Time of Torching	8.7			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	20:30		Number traps used								
	Time finish	20:35										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 9.7 °C. Pond is concrete lined and very shallow with steep sides. Unsuitable for bottle trapping/netting											

Pond Number/Reference	Pond 36			Date	25/04/2019			Visit Number	2			
Surveyor Names	James Coupe and Sally Clague											
Weather conditions (Description)	Cool evening after warm, showery day											
Air Temperature (°C) @ Time of Torching	6.8			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	4			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	20:43		Number traps used	10							
	Time finish	20:50										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				1	1							
Smooth Newt		1		9	2							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10.6 °C. No egg search conducted as GCN eggs found on a previous visit.								

Pond Number/Reference	Pond 7			Date	02/05/2019			Visit Number	3			
Surveyor Names	James Coupe and George Thorpe											
Weather conditions (Description)	Warm evening after showery day											
Air Temperature (°C) @ Time of Torching	8.2			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible				
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	21:29		Number traps used	25							
	Time finish	21:42										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN		1		2	1							
Smooth Newt				1	3							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							✓					
Common Toad	1						✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.8 °C. No egg search conducted as GCN eggs previously found.								

Pond Number/Reference	Pond 11			Date	02/05/2019			Visit Number	3			
Surveyor Names	James Coupe and George Thorpe											
Weather conditions (Description)	Warm evening after showery day											
Air Temperature (°C) @ Time of Torching	8.2			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	3			% Pond Margin Inaccessible				
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:05		Number traps used	20							
	Time finish	21:12										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.				Male	Female	Imm.
GCN	1	2		2	2							
Smooth Newt	3	3		2	1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 11.4 °C. Patches of clear water under dense grass cover. Pond has lost a lot of water since the last visit.								

Pond Number/Reference	Pond 12			Date	02/05/2019			Visit Number	3			
Surveyor Names	James Coupe and George Thorpe											
Weather conditions (Description)	Warm evening after showery day											
Air Temperature (°C) @ Time of Torching	8.2			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	1			% Pond Margin Inaccessible	5			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	20:58		Number traps used	15							
	Time finish	21:05										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				3	2							
Smooth Newt	1			2	2							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 11.4 °C. No egg search conducted as GCN eggs previously found.											

Pond Number/Reference	Pond 19			Date	02/05/2019			Visit Number	2			
Surveyor Names	James Coupe and George Thorpe											
Weather conditions (Description)	Warm evening after showery day											
Air Temperature (°C) @ Time of Torching	8.2			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	20			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	20:34		Number traps used								
	Time finish	20:40										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 11.3 °C. Pond too shallow to bottle trap or net											

Pond Number/Reference	Pond 36			Date	02/05/2019			Visit Number	3			
Surveyor Names	James Coupe and George Thorpe											
Weather conditions (Description)	Warm evening after showery day											
Air Temperature (°C) @ Time of Torching	8.2			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	5			% Pond Margin Inaccessible				
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓			✓					
	Time start	21:45		Number traps used	10							
	Time finish	21:50										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt	1			3	5							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10.1 °C Egg search not conducted as GCN eggs found on previous visit. Netting conducted due to high vegetation cover making torching nearly impossible								

Pond Number/Reference	Pond 44			Date	07/05/2019			Visit Number	1			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Warm evening after dry day											
Air Temperature (°C) @ Time of Torching	10			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	0			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:15		Number traps used	5							
	Time finish	22:20										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt	5	8										
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 15.3 °C.								

Pond Number/Reference	Pond AD 2			Date	07/05/2019			Visit Number	1			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Warm evening after dry day											
Air Temperature (°C) @ Time of Torching	10			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	3			% Pond Margin Inaccessible	20			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	22:40		Number traps used								
	Time finish	22:45										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt	0	0										
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12 °C. Concrete bottomed and too shallow to effectively trap or net. Very little vegetation so easy to effectively torch entire pond.								

Pond Number/Reference	Pond 7			Date	08/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Sunny evening after wet day											
Air Temperature (°C) @ Time of Torching	9.7			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible	15			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	22:10		Number traps used	25							
	Time finish	22:20										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN	1			2	1							
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							✓					
Common Toad							✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 11 °C. Egg search not conducted as GCN eggs previously found											

Pond Number/Reference	Pond 11			Date	08/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Sunny evening after wet day											
Air Temperature (°C) @ Time of Torching	9.7			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:35		Number traps used	15							
	Time finish	21:43										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN		1			2							
Smooth Newt	2	1			1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad				1								
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10.3 °C								

Pond Number/Reference	Pond 12			Date	08/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Sunny evening after wet day											
Air Temperature (°C) @ Time of Torching	9.7			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible	10			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	21:40		Number traps used	15							
	Time finish	21:43										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				2	3							
Smooth Newt				4	3							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10 °C. Egg search not conducted as GCN eggs previously found								

Pond Number/Reference	Pond 19			Date	08/05/2019			Visit Number	3			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Sunny evening after wet day											
Air Temperature (°C) @ Time of Torching	9.7			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	2			% Pond Margin Inaccessible	40			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	21:01		Number traps used								
	Time finish											
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt	5	8										
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10.6 °C. Too shallow to bottle trap/net								

Pond Number/Reference	Pond 44			Date	09/05/2019			Visit Number	2			
Surveyor Names	James Coupe and Megan Gee											
Weather conditions (Description)	Cloudy evening after wet day											
Air Temperature (°C) @ Time of Torching	7.9			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	0			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:30		Number traps used	5							
	Time finish	21:35										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 9 °C.								

Pond Number/Reference	Pond AD 2			Date	09/05/2019			Visit Number	2			
Surveyor Names	James Coupe and Megan Gee											
Weather conditions (Description)	Cloudy evening after wet day											
Air Temperature (°C) @ Time of Torching	10			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	22:00		Number traps used	0							
	Time finish	22:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 7.5 °C. Pond concrete lined and very shallow so unable to torch/net								

Pond Number/Reference	Pond 44			Date	13/05/2019			Visit Number	3			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm, dry evening after hot day											
Air Temperature (°C) @ Time of Torching	10.5			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	0			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:10		Number traps used	5							
	Time finish	22:15										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.1 °C.								

Pond Number/Reference	Pond AD2			Date	13/05/2019			Visit Number	3			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm, dry evening after hot day											
Air Temperature (°C) @ Time of Torching	10.5			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	25			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	21:30		Number traps used								
	Time finish	21:35										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temp 12.0°C. Pond concrete lined and too shallow to effectively bottle trap/net								

Pond Number/Reference	Pond 7			Date	16/05/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Cloudy evening after hot day											
Air Temperature (°C) @ Time of Torching	11.8			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible	20			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	22:30		Number traps used	25							
	Time finish	22:37										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				1	1							
Smooth Newt					1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							✓					
Common Toad							✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 13.9 °C. Egg search not conducted as GCN eggs previously found											

Pond Number/Reference	Pond 11			Date	16/05/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Cloudy evening after hot day											
Air Temperature (°C) @ Time of Torching	11.8			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	0			Veg cover (0-5)	1			% Pond Margin Inaccessible	10			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:00		Number traps used	15							
	Time finish	22:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN	1	2		1								
Smooth Newt	1	4		1								
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.3 °C. Water level has dipped significantly since previous visit								

Pond Number/Reference	Pond 12			Date	16/05/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Cloudy, evening after hot day											
Air Temperature (°C) @ Time of Torching	11.8			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible	40			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	22:00		Number traps used	15							
	Time finish	22:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt		3		1	1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.3 °C Egg search not conducted as GCN eggs previously found								

Pond Number/Reference	Pond 19			Date	16/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Cloudy evening after hot day											
Air Temperature (°C) @ Time of Torching	11.8			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	20			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	21:35		Number traps used								
	Time finish	21:40										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt	2	4										
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 11.8 °C. Pond is concrete lined and very shallow and not suitable for bottle trapping/netting								

Pond Number/Reference	Pond 7			Date	23/05/2019			Visit Number	6			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm evening after hot day											
Air Temperature (°C) @ Time of Torching	15.7			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	2			% Pond Margin Inaccessible	10			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	21:10		Number traps used	25							
	Time finish	21:25										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				3								
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1						✓					
Common Toad							✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 17.2 °C. Egg search not conducted as GCN eggs previously found								

Pond Number/Reference	Pond 11			Date	23/05/2019			Visit Number	6			
Surveyor Names	James Coupe and Annabel Hoeffler											
Weather conditions (Description)	Warm evening after hot sunny day											
Air Temperature (°C) @ Time of Torching	15.7			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	2			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:00		Number traps used	15							
	Time finish	22:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN		1		2		1						
Smooth Newt		4		1								
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 14.8°C Water level has dipped since previous visit								

Pond Number/Reference	Pond 12			Date	23/05/2019			Visit Number	6			
Surveyor Names	James Coupe and Annabel Hoeffler											
Weather conditions (Description)	Warm evening after hot, sunny day											
Air Temperature (°C) @ Time of Torching	15.7			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	2			% Pond Margin Inaccessible	30			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓								
	Time start	21:50		Number traps used	15							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN	2											
Smooth Newt				1	2							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	Water temperature 14.2 °C. Egg search not conducted as GCN eggs previously found											

Pond Number/Reference	Pond 44			Date	28/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool, dry evening after warm day											
Air Temperature (°C) @ Time of Torching	10.3			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	1			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:00		Number traps used	5							
	Time finish	22:05										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							✓					
Common Toad							✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12 ° C								

Pond Number/Reference	Pond AD 2			Date	28/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool, dry evening after warm day											
Air Temperature (°C) @ Time of Torching	10.1			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	0			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	22:25		Number traps used								
	Time finish	22:30										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temp 11.9°C Pond is concrete lined and very shallow so unable to bottle trap/net.								

Pond Number/Reference	Pond 6			Date	30/05/2019			Visit Number	1			
Surveyor Names	James Coupe and Freya McCarthy											
Weather conditions (Description)	Mild with slight breeze and no rain											
Air Temperature (°C) @ Time of Torching	15.4			Minimum Overnight Temperature (°C)	13			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:26		Number traps used	10							
	Time finish	21:56										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				1								
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							✓					
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 14.4 ° C								

Pond Number/Reference	Pond 6			Date	03/06/2019			Visit Number	2			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm, dry evening after warm, dry day											
Air Temperature (°C) @ Time of Torching	12.1			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	0			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:21		Number traps used	5							
	Time finish	21:26										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							1					
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.9 ° C. Water level has dipped considerably since last visit leaving areas of deep silt and it is very difficult to access safely								

Pond Number/Reference	Pond 44			Date	03/06/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm, dry evening after warm, dry day											
Air Temperature (°C) @ Time of Torching	12.1			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	1			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:55		Number traps used	5							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1						✓					
Common Toad							✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 14.1 ° C.								

Pond Number/Reference	Pond AD 2			Date	03/06/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm, dry evening after warm, dry day											
Air Temperature (°C) @ Time of Torching	12.1			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	0			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	22:25		Number traps used								
	Time finish	22:30										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temp 13.8°C. Fountain now active in pond. Pond shallow and concrete lined								

Pond Number/Reference	Pond 28			Date	10/06/2019			Visit Number	1			
Surveyor Names	Tom Johnson and Deirdre Reidy											
Weather conditions (Description)	Heavy rain, mild											
Air Temperature (°C) @ Time of Torching	10.2			Minimum Overnight Temperature (°C)	9			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	5			% Pond Margin Inaccessible	40			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:10		Number traps used	13							
	Time finish	22:25										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 11.5 ° C. Water level rose sharply overnight due to pond at bottom of slope and heavy rain								

Pond Number/Reference	Pond 44			Date	12/06/2019			Visit Number	6			
Surveyor Names	James Coupe and Kerry Coupe											
Weather conditions (Description)	Rainy wet evening											
Air Temperature (°C) @ Time of Torching	12.2			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	1			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:15		Number traps used	5							
	Time finish	22:20										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							✓					
Common Toad							✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10.8 ° C								

Pond Number/Reference	Pond AD 2			Date	12/06/2019			Visit Number	6			
Surveyor Names	James Coupe and Kerry Coupe											
Weather conditions (Description)	Rainy wet evening											
Air Temperature (°C) @ Time of Torching	12.2			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓										✓	
	Time start	22:15		Number traps used								
	Time finish	22:20										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10.2 ° C. Pond is shallow and concrete lined, unable to bottle trap/net.								

Pond Number/Reference	Pond 6			Date	12/06/2019			Visit Number	3			
Surveyor Names	James Coupe and Kerry Coupe											
Weather conditions (Description)	Rainy wet evening											
Air Temperature (°C) @ Time of Torching	12.2			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:40		Number traps used	10							
	Time finish	21:46										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 11.1 ° C								

Pond Number/Reference	Pond 26			Date	13/06/2019			Visit Number	1			
Surveyor Names	Tom Johnson and Deirdre Reidy											
Weather conditions (Description)	Clear, mild											
Air Temperature (°C) @ Time of Torching	11			Minimum Overnight Temperature (°C)	9			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	5			% Pond Margin Inaccessible	95			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:15		Number traps used	5							
	Time finish	22:30										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog							2 in trap					
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 13.5 ° C. Hard to access vegetation and flooding from rain only area suitable and safe to install traps								

Pond Number/Reference	Pond 28			Date	13/06/2019			Visit Number	2			
Surveyor Names	Tom Johnson and Deirdre Reidy											
Weather conditions (Description)	Mild, drizzling											
Air Temperature (°C) @ Time of Torching	11			Minimum Overnight Temperature (°C)	9			Torch Power	1 million CP			
Turbidity (0-5)	5			Veg cover (0-5)	1			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	✓
	Time start	22:15		Number traps used	5							
	Time finish	22:30										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Affected by high flooding, water level rose dramatically								

Pond Number/Reference	Pond 6			Date	19/06/2019			Visit Number	4			
Surveyor Names	James Coupe and Freya McCarthy											
Weather conditions (Description)	Calm evening after dry day											
Air Temperature (°C) @ Time of Torching	15.1			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:40		Number traps used	10							
	Time finish	21:45										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 13.5 ° C								

Pond Number/Reference	Pond 6			Date	24/06/2019			Visit Number	5			
Surveyor Names	James Coupe and Theresa Chan											
Weather conditions (Description)	Dry evening after warm day											
Air Temperature (°C) @ Time of Torching	18			Minimum Overnight Temperature (°C)	16			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	65			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:35		Number traps used	10							
	Time finish	21:40										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt					1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 15.8 ° C								

Pond Number/Reference	Pond 6			Date	27/06/2019			Visit Number	6			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Breezy, dry evening after hot day											
Air Temperature (°C) @ Time of Torching	15.7			Minimum Overnight Temperature (°C)	11			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:35		Number traps used	10							
	Time finish	21:40										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 14.9 ° C								

Pond Number/Reference	Pond 36			Date	08/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Sunny evening after warm day											
Air Temperature (°C) @ Time of Torching	9.7			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	5			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓			✓					
	Time start	21:35		Number traps used	10							
	Time finish	21:40										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN				1								
Smooth Newt				10	5							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 10.5 ° C,								

Pond Number/Reference	Pond 36			Date	16/05/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Cloudy evening after hot day											
Air Temperature (°C) @ Time of Torching	11.8			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	5			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓			✓					
	Time start	22:00		Number traps used	10							
	Time finish	22:05										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.4 ° C,								

Pond Number/Reference	Pond 36			Date	23/05/2019			Visit Number	6			
Surveyor Names	James Coupe and Annabel Hoeffler											
Weather conditions (Description)	Warm evening after hot day											
Air Temperature (°C) @ Time of Torching	15.7			Minimum Overnight Temperature (°C)	8			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	5			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓			✓					
	Time start	22:15		Number traps used	10							
	Time finish	22:20										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt				1	2							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 15.1 ° C,								

Pond Number/Reference	Pond 9			Date	07/05/2019			Visit Number	1			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Warm evening after dry day											
Air Temperature (°C) @ Time of Torching	10			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	3			% Pond Margin Inaccessible	90			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:05		Number traps used	10							
	Time finish	22:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt				1	1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.2 ° C,								

Pond Number/Reference	Pond 9			Date	09/05/2019			Visit Number	2			
Surveyor Names	James Coupe and Megan Gee											
Weather conditions (Description)	Cloudy evening after wet day											
Air Temperature (°C) @ Time of Torching	7.9			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	0			Veg cover (0-5)	2			% Pond Margin Inaccessible	75			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:30		Number traps used	10							
	Time finish	21:35										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt				10	1							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1						✓					
Common Toad							✓					
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 12.1 ° C,								

Pond Number/Reference	Pond 9			Date	13/05/2019			Visit Number	3			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm dry evening after hot day											
Air Temperature (°C) @ Time of Torching	10.5			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	2			Veg cover (0-5)	3			% Pond Margin Inaccessible	80			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:55		Number traps used	10							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt				1	2							
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog	1											
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water temperature 16.4 ° C,								

Pond Number/Reference	Pond 9			Date	28/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool dry evening after warm day											
Air Temperature (°C) @ Time of Torching	10.1			Minimum Overnight Temperature (°C)	6			Torch Power	N/A			
Turbidity (0-5)	0			Veg cover (0-5)	1			% Pond Margin Inaccessible	100			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used												
	Time start			Number traps used								
	Time finish											
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)	All previously accessible areas of the pond have dried up. We were unable to survey further due to health and safety reasons.											

Pond Number/Reference	Pond AD 15			Date	07/05/2019			Visit Number	1			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Warm evening after dry day											
Air Temperature (°C) @ Time of Torching	10			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:45		Number traps used	30							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 12.3° C.								

Pond Number/Reference	Pond AD 15			Date	09/05/2019			Visit Number	2			
Surveyor Names	James Coupe and Megan Gee											
Weather conditions (Description)	Cloudy after wet day											
Air Temperature (°C) @ Time of Torching	7.9			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	20:59		Number traps used	30							
	Time finish	21:09										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 7.7° C.								

Pond Number/Reference	Pond AD 15			Date	13/05/2019			Visit Number	3			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm evening after hot day											
Air Temperature (°C) @ Time of Torching	10.5			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	20:55		Number traps used	30							
	Time finish	21:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.				Male	Female	Imm.
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 12.1° C.								

Pond Number/Reference	Pond AD 15			Date	28/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool dry evening after warm day											
Air Temperature (°C) @ Time of Torching	10.3			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	40			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:30		Number traps used	30							
	Time finish	21:45										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 13.1° C.								

Pond Number/Reference	Pond AD 15			Date	03/06/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Cool dry evening after warm day											
Air Temperature (°C) @ Time of Torching	12.1			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:50		Number traps used	30							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 11.3° C.								

Pond Number/Reference	Pond AD 15			Date	12/06/2019			Visit Number	6			
Surveyor Names	James Coupe and Kerry coupe											
Weather conditions (Description)	Rainy wet evening											
Air Temperature (°C) @ Time of Torching	12.2			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	50			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:00		Number traps used	30							
	Time finish	22:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 10.6° C.								

Pond Number/Reference	Pond AD 15a			Date	07/05/2019			Visit Number	1			
Surveyor Names	James Coupe and Tom Johnson											
Weather conditions (Description)	Warm evening after dry day											
Air Temperature (°C) @ Time of Torching	10			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	1			Veg cover (0-5)	1			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:45		Number traps used	25							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 12.3° C. A very large fish population present								

Pond Number/Reference	Pond AD 15a			Date	09/05/2019			Visit Number	2			
Surveyor Names	James Coupe and Megan Gee											
Weather conditions (Description)	Cloudy after wet day											
Air Temperature (°C) @ Time of Torching	7			Minimum Overnight Temperature (°C)	7			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:09		Number traps used	30							
	Time finish	21:19										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 7.6° C.								

Pond Number/Reference	Pond AD 15a			Date	13/05/2019			Visit Number	3			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Warm evening after hot day											
Air Temperature (°C) @ Time of Torching	10.5			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:10		Number traps used	30							
	Time finish	21:20										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 12° C.								

Pond Number/Reference	Pond AD 15a			Date	28/05/2019			Visit Number	4			
Surveyor Names	James Coupe and Cameron Chester											
Weather conditions (Description)	Cool dry evening after warm day											
Air Temperature (°C) @ Time of Torching	10.3			Minimum Overnight Temperature (°C)	6			Torch Power	1 million CP			
Turbidity (0-5)	3			Veg cover (0-5)	1			% Pond Margin Inaccessible	70			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:45		Number traps used	25							
	Time finish	21:55										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 13.1° C.								

Pond Number/Reference	Pond AD 15a			Date	03/06/2019			Visit Number	5			
Surveyor Names	James Coupe and Alex Shingler											
Weather conditions (Description)	Cool dry evening after warm day											
Air Temperature (°C) @ Time of Torching	12.1			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	4			Veg cover (0-5)	1			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	21:50		Number traps used	25							
	Time finish	22:00										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												
Comments (including justification for deviation from torch, net, egg search)				Water Temp 11.3° C.								

Pond Number/Reference	Pond AD 15a			Date	12/06/2019			Visit Number	6			
Surveyor Names	James Coupe and Kerry coupe											
Weather conditions (Description)	Rainy wet evening											
Air Temperature (°C) @ Time of Torching	12.2			Minimum Overnight Temperature (°C)	10			Torch Power	1 million CP			
Turbidity (0-5)	4			Veg cover (0-5)	1			% Pond Margin Inaccessible	60			
	Torch			Bottle-trap			Net			Larvae (any method)	Egg search	Refuge search
Methods used	✓			✓							✓	
	Time start	22:00		Number traps used	25							
	Time finish	22:10										
Sex/life stage:	Male	Female	Imm.	Male	Female	Imm.	Male	Female	Imm.			
GCN												
Smooth Newt												
Palmate Newt												
	Adults			Juveniles			Tadpoles			Spawn		
Common Frog												
Common Toad												
Other amphibian												